

## Short Communication

SPAWNING OF RED SNAPPER (*LUTJANUS CAMPECHANUS*) IN CAPTIVITY

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## ABSTRACT

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Red snapper (*Lutjanus campechanus*) spawned in captivity when held at temperatures and photoperiods which approximated normal conditions in the Texas Gulf of Mexico region. Multiple spawns were observed in May and June, 1978.

The red snapper is of both commercial and recreational importance. According to current fishery statistics, commercial landings of this species in the U.S.A. amount to almost 4500 metric tonnes per year (worth about U.S. Dollar 9,000,000) and an additional 4500–6800 per year are taken by recreational fishermen (Bell, 1978). Little is known of the life history of red snapper, and a decline in landings of this desirable species in recent years may be indicative of declining populations. Further information concerning spawning, development and life history is needed if efforts are to be made to replenish these populations.

On 15 September 1976, 46 red snapper were collected by hook-and-line off the jetties at Port Aransas, Texas, in the Gulf of Mexico. Fork lengths ranged from 19.5 to 36.2 cm. Twelve fish, ranging in fork length from 21.7 to 36.2 cm, to be used for spawning studies, were transported to one of the 29.920-l spawning tanks at the National Fisheries Laboratory at Port Aransas. This tank was equipped with a biological filter, and photoperiod and temperature within the tank could be manipulated as described by Arnold et al. (1976). The selected fish were fed daily on frozen shrimp, squid and fish. Uneaten food was removed within 1 h of feeding. Ammonia levels remained low (less than 0.3 ppm) while pH levels ranged from 7.4 to 7.7. Holding salinities ranged from 31 to 36 p.p.t. Photoperiods and temperatures were

TABLE I

Photoperiod and temperature regimes for captive red snapper. (\*Months in which spawning occurred)

Month	Photoperiod (L—D)	Temperature (°C)
September	15— 9	27—28.5
October	15— 9	26—27
November	12—12	25—23
December	9—15	23—19
January	12—12	19—13
February	12—12	17—21
March	15— 9	20—22.5
April	15— 9	22—24
*May	15— 9	24—25.5
*June	15— 9	23—25

adjusted regularly to approximately follow normal conditions for this region. The photoperiod and temperature regimes which were maintained from September 1977 until June 1978 are given in Table I.

The only deaths were due to fish jumping out of the tank. Four fish were lost in this way during the months of July and August, 1977. Further losses were prevented by stretching netting across the top of the tank. The mean fork length of the four dead fish was 43.4 cm. Because average length of the 12 fish originally stocked in the tank about 10 months earlier was 26.2 cm, a growth rate of about 1.7 cm per month was indicated.

In May 1978, there were indications that these fish were about to spawn. Their red coloration became deeper and more vivid, spontaneous activity increased, and males were frequently observed to nose against the underbelly of females. No aggressive or territorial behavior among males was evident. The first spawn occurred on 7 May 1978. Subsequent spawns occurred on 8 and 20 May, and on 3, 7, 10 and 12 June. Each spawn consisted of a few thousand small (0.8-mm diameter), almost transparent eggs. Fertilization rate was high (more than 90%). Conditions when spawning occurred included 15L—9D photoperiod, 23—25° C water temperature, and 31—34 p.p.t. salinity. This report apparently represents the first successful spawning of this species in captivity using temperature and photoperiod manipulation. Development of eggs and larval stages will be described in detail in a subsequent publication (manuscript in preparation).

## REFERENCES

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